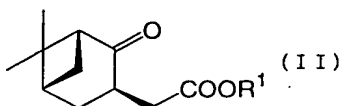
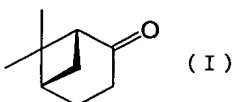


# CLAIMS

1. A process for the preparation of a compound (II):

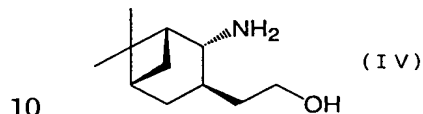


5 wherein R<sup>1</sup> is alkyl, which comprises reacting a compound (I):

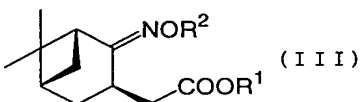


with XCH<sub>2</sub>COOR<sup>1</sup> wherein X is halogen, and R<sup>1</sup> is as defined above in the presence of an additive and a base.

2. A process for the preparation of a compound (IV):

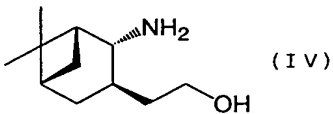


10 which comprises reducing a compound (III):

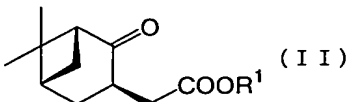


wherein R<sup>1</sup> is as defined above, and R<sup>2</sup> is hydrogen or alkyl, with an aluminum hydride,

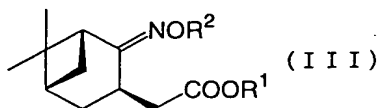
15 3. A process for the preparation of a compound (IV):



which comprises reacting a compound (II):

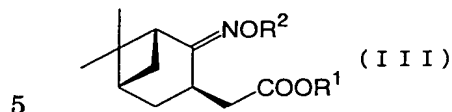


20 wherein R<sup>1</sup> is as defined above, with NH<sub>2</sub>OR<sup>2</sup> wherein R<sup>2</sup> is as defined above to give a compound (III):

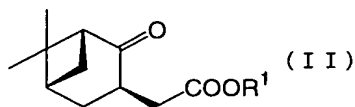


wherein R<sup>1</sup> and R<sup>2</sup> are as defined above, and reducing the compound (III) with an aluminum hydride.

4. A process for the preparation of a compound (III):

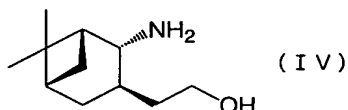


wherein R<sup>1</sup> and R<sup>2</sup> are as defined above, which comprises preparing a compound (II):

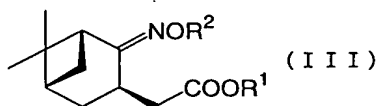


10 wherein R<sup>1</sup> is as defined above, through the process according to claim 1, and reacting the compound (II) with NH<sub>2</sub>OR<sup>2</sup> wherein R<sup>2</sup> is as defined above.

5. A process for the preparation of a compound (IV):



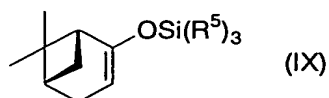
which comprises preparing a compound (III):



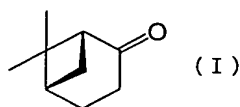
15 wherein R<sup>1</sup> and R<sup>2</sup> are as defined above through the process according to claim 4, and reducing the compound (III) with an aluminum hydride.

6. The process according to any one of claims 2, 3 or 5 wherein the aluminum hydride is prepared by reacting a Lewis acid with lithium aluminum hydride or reacting concentrated sulfuric acid with lithium aluminum hydride.

20 7. A process for the preparation of a compound (IX):

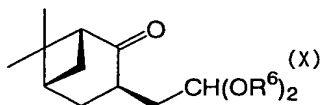


wherein  $R^5$  each is independently alkyl, which comprises reacting a compound (I):

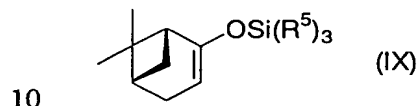


with  $(R^5)_3SiX$  wherein  $R^5$  is as defined above, and X is halogen, in the presence  
5 of a base.

8. A process for the preparation of a compound (X):

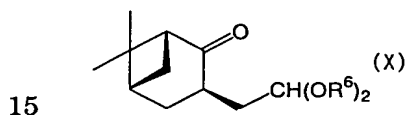


wherein  $R^6$  each is independently alkyl, which comprises reacting a compound (IX):

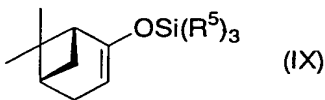


wherein  $R^5$  each is independently alkyl, with  $CH_2=CHOR^6$  wherein  $R^6$  is as defined above in the presence of ceric ammonium nitrate (IV) in a solvate of  $R^6OH$  wherein  $R^6$  is as defined above.

9. A process for the preparation of a compound (X):

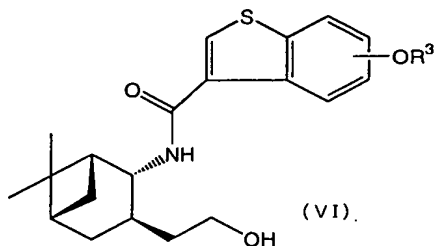


wherein  $R^6$  is as defined above, which comprises preparing a compound (IX):

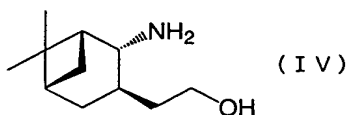


wherein  $R^5$  is as defined above through the process according to claim 7, and reacting the compound (IX) with  $CH_2=CHOR^6$  wherein  $R^6$  is as defined above  
20 in the presence of ceric ammonium nitrate (IV) in a solvent of  $R^6OH$  wherein  $R^6$  is as defined above.

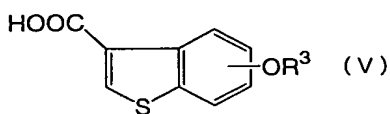
10. A process for the preparation of a compound (VI):



wherein  $R^3$  is hydrogen, alkyl, acyl, alkylsulfonyl or arylsulfonyl, which comprises preparing a compound (IV):

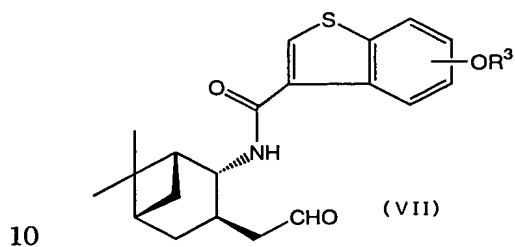


- 5 through the process according to any one of claims 2, 3, 5 and 6, and reacting the compound (IV) or its salt with a compound (V):

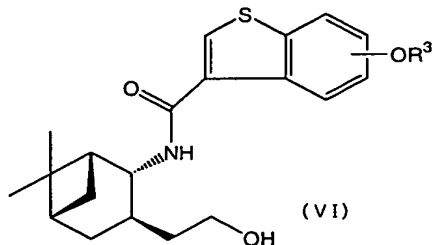


wherein  $R^3$  is as defined above or its reactive derivative.

11. A process for the preparation of a compound (VII):

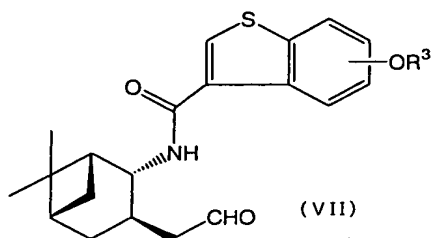


wherein  $R^3$  is as defined above, which comprises preparing a compound (VI):

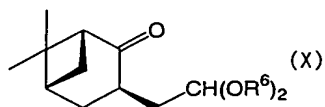


wherein  $R^3$  is as defined above through the process according to claim 10, and oxidizing the compound (VI).

12. A process for the preparation of a compound (VII):

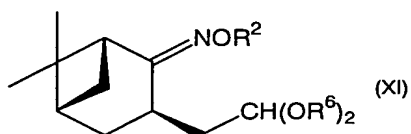


wherein R<sup>3</sup> is as defined above, which comprises preparing a compound (X):

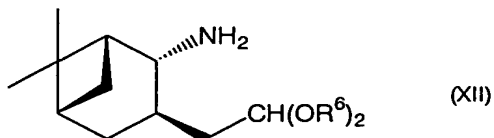


wherein R<sup>6</sup> is as defined above through the process according to claim 8 or 9,

5 reacting the compound (X) with NH<sub>2</sub>OR<sup>2</sup> wherein R<sup>2</sup> is as defined above to give a compound (XI):

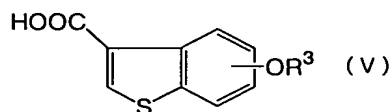


wherein R<sup>2</sup> and R<sup>6</sup> are as defined above, reducing the compound (XI) to give a compound (XII):



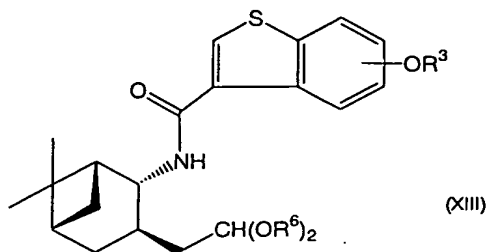
10

wherein R<sup>6</sup> is as defined above, reacting the compound (XII) with a compound (V):



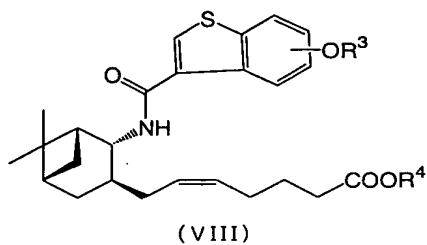
wherein R<sup>3</sup> is as defined above or its reactive derivative to give a compound

15 (XIII):

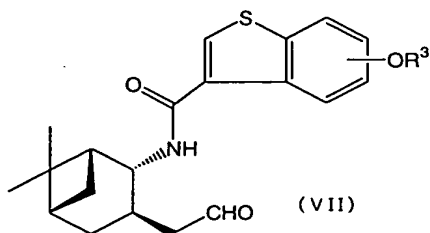


wherein  $R^3$  and  $R^6$  are as defined above, and reacting the compound (XIII) with an acid.

13. A process for the preparation of a compound (VIII):



wherein  $R^3$  is as defined above,  $R^4$  is hydrogen or alkyl, and a double bond represents E- or Z-configuration, a pharmaceutically acceptable salt or hydrate thereof, which comprises preparing a compound (VII):



wherein  $R^3$  is as defined above through the process according to claim 11 or 12, reacting the compound (VII) with an ylide of the formula:  $\text{Ph}_3\text{P}=\text{CH}(\text{CH}_2)_3\text{COOR}^4$  wherein  $R^4$  is as defined above, and if desired, deprotecting.